NIH NATIONAL CANCER INSTITUTE

Tempol as a Therapeutic to Treat Covid-19 Via Inhibition of Viral Replication

Summary (1024-character limit)

The National Cancer Institute (NCI) and the National Institute of Child Health and Human Development (NICHD) seek research co-development partners and/or licensees for an antiviral treatment that can target SARS-Cov-2 replication in Covid-19 patients.

NIH Reference Number

E-031-2021

Product Type

- Therapeutics

Keywords

- Covid-19, Antiviral, SARS-Cov-2, RNA-dependent RNA Polymerase inhibitor, RdRP Inhibitor, Tempol, Rouault

Collaboration Opportunity

This invention is available for licensing and co-development.

Contact

- Michael Salgaller, Ph.D.
  NCI - National Cancer Institute

  240-276-5476

  michael.salgaller@nih.gov

Description of Technology

Despite several partially effective prophylactic vaccines for SARS-CoV-2 exist, patients worldwide still succumb to COVID-19. New therapeutics to treat this disease are still needed. Upon host invasion, a critical step in the pathogenesis of COVID-19 is intracellular replication of SARS-CoV-2 before viral particles invade nearby healthy cells. This triggers an extreme inflammatory response that may lead to acute respiratory distress syndrome (ARDS) or transmission to another host. Therefore, therapeutics that can successfully curb the replication of SARS-CoV-2 are imperative.

Within host cells, the replication of SARS-CoV-2's genome is catalyzed by RNA-dependent RNA Polymerase (RdRP). NIH investigators discovered that the nitroxide antioxidant, TEMPOL, interferes with RdRP's assembly and activity, leading to reduced viral replication in vitro. This discovery suggests that TEMPOL could serve as an antiviral to treat patients with active SARS-CoV-2 infection.

Potential Commercial Applications

- Covid-19 therapeutic
- SARS-CoV-2 antiviral

Competitive Advantages

- Targets replication of SARS-CoV-2
- Inexpensive
- Accessible
- Low cytotoxicity

Inventor(s)

Tracey A Rouault (NICHD), Marston W Linehan (NCI)

Development Stage

- Discovery (Lead Identification)

Publications

Maio Nunziata, et al., Fe-S cofactors in the SARS-CoV-2 RNA-dependent RNA polymerase are potential antiviral targets [PMID 34083449]

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 63/193,656 , Filed 27 May 2021

Therapeutic Area

- Infectious Diseases
- Immune System and Inflammation